

PES-0042

Claims:

1. (cancelled)

2. (previously presented) The electrochemical cell system of claim 11, wherein said parameter of said gas output is a pressure of said gas output.

3. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of a desired gas output pressure, said memory device is further configured to store a second operational parameter, said second operational parameter is indicative of a pressure variance limit relative to said desired gas output pressure; and

wherein said processor is adapted to provide an increase-signal to said energy source in response to said pressure of said gas output being less than said desired gas output pressure by an amount greater than said pressure variance limit.

4. (previously presented) The electrochemical cell system of claim 3, wherein said processor is adapted to provide a decrease-signal to said energy source in response to said pressure of said gas output exceeding said desired gas output pressure by an amount greater than said pressure variance limit.

5. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of an upper limit set point for gas output pressure, and said processor is adapted to provide a decrease-signal to said energy source in response to said pressure of said gas output exceeding said upper limit set point for gas output pressure.

6. (previously presented) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of a lower limit set point for gas output pressure, and said processor is adapted to provide an increase-signal to said energy source in response to said pressure of said gas output being less than said upper limit set point for gas output pressure.

PES-0042

7. (currently amended) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of an expected increase in gas output pressure over a period of time, said processor is adapted to monitor said ~~output~~first signal over said period of time to determine a change in said gas output pressure, and said processor is adapted to provide an interrupt signal to said energy source in response to said change in said gas output pressure being less than said expected increase.

8. (currently amended) The electrochemical cell system of claim 2, wherein said first operational parameter is indicative of an expected increase in gas output pressure over a period of time, said processor is adapted to monitor said ~~output~~first signal over said period of time to determine a change in said gas output pressure, and said processor is adapted to provide a signal to an alarm in response to said change in said gas output pressure being less than said expected increase.

9. (previously presented) The electrochemical cell system of claim 7 wherein said processor is adapted to determine said first operational parameter based on said quantity of energy to said electrochemical cell.

10. (currently amended) The electrochemical cell system of claim 9 wherein said processor is adapted to receive a second signal indicative of said quantity of energy in response to feedback from said energy source.

PES-0042

11. (currently amended) An electrochemical cell system comprising:
 - an electrochemical cell;
 - an electrical energy source configured for providing a quantity of electrical energy to said electrochemical cell;
 - a sensing apparatus in operable communication with a gas output from said electrochemical cell, said sensing apparatus adapted to provide an output a first signal indicative of a parameter of said gas output; and
 - a computer in operable communication with said sensing apparatus and said electrical energy source, said computer including:
 - ~~a memory device configured to store a first operational parameter, and~~
 - ~~a processor programmed for~~ configured to receive a digital representation of said output signal and said first operational parameter, said processor configured to compares said digital representation of said output signal to said first operational parameter, and to regulate said quantity of energy provided to said electrochemical cell in response thereto;
 - retrieving a first operational parameter and a predetermined variance from a memory device;
 - comparing said first signal to said first operational parameter;
 - providing a third signal to said electrical source in response to said first signal differing from said first operational parameter by an amount greater than said predetermined variance;
 - adjusting an output of said electrical source in response to said third signal;
 - adjusting at least one of said predetermined value and said predetermined variance based on feedback from said electrical source;
 - wherein said processor and a non-volatile memory device are operably coupled to a remote computer, said remote computer is configured to provide said first operational parameter to said non-volatile memory device.

12. (previously presented) The electrochemical cell system of claim 11, wherein said processor is adapted to determine said first operational parameter based on feedback from said energy source.

PES-0042

13. (cancelled)

14. (previously presented) The method of claim 16, wherein said parameter is a pressure of said gas output, and said predetermined value is indicative of a predetermined pressure.

15. (currently amended) A method for controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a first sensed signal indicative of said parameter;

retrieving a predetermined value and a predetermined variance from a memory device;
comparing said sensed first signal to said predetermined value;

providing a third signal to said electrical source in response to said sensed first signal differing from said predetermined value by an amount greater than said predetermined variance;

adjusting an output of said electrical source in response to said third signal to said electrical source; and

adjusting at least one of said predetermined value and said predetermined variance based on feedback from said electrical source; and

providing said predetermined value and said predetermined variance to said memory device from a remote computer.

PES-0042

16. (currently amended) A method for controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed-first signal indicative of said parameter;

retrieving a predetermined value and a predetermined variance from a memory device; comparing said sensed-first signal to said predetermined value;

providing a third signal to said electrical source in response to said sensed-first signal differing from said predetermined value by an amount greater than said predetermined variance;

adjusting an output of said electrical source in response to said third signal to said electrical source; and

adjusting at least one of said predetermined value and said predetermined variance based on feedback from said electrical source.

17 - 18. (cancelled)

19. (previously presented) The method of claim 21, wherein said parameter is a pressure of said gas output, said predetermined upper-value is indicative of an upper limit set point for gas output pressure, and said predetermined lower-value is indicative of a lower limit set point for gas output pressure.

20. (cancelled)

PES-0042

21. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed-first signal indicative of said parameter;

retrieving a predetermined upper-value from a memory device;

comparing said sensed-first signal to said predetermined upper-value;

providing a lower-signal to said electrical source in response to said sensed-first signal being greater than said predetermined upper-value;

lowering an output of said electrical source in response to said lower-signal;

retrieving a predetermined lower-value from a memory device;

comparing said sensed-first signal to said predetermined lower-value;

providing an increase-signal to said electrical source in response to said sensed-first signal being less than said predetermined lower-value; and

increasing an output of said electrical source in response to said increase-signal; and

adjusting at least one of said predetermined upper-value and said predetermined lower-value based on feedback from said electrical source.

22. (cancelled)

23. (previously presented) The method of claim 27, further comprising:

interrupting an output of said electrical source in response to said signal.

24. (previously presented) The method of claim 27, further comprising:

activating an alarm in response to said signal.

25. (previously presented) The method of claim 27, wherein said parameter is a pressure of said gas output.

26. (cancelled)

PES-0042

27. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed-first signal indicative of said parameter;

retrieving a predetermined value from a memory device, said predetermined value indicative of an expected increase in said parameter over a period of time;

monitoring said sensed-first signal over said period of time to determine an increase in said parameter;

providing a signal to one or more of an alarm and said electrical source in response to said increase in said parameter being less than said expected increase in said parameter; and adjusting said predetermined value based on feedback from said electrical source.

28. (currently amended) A method of controlling a gas output from an electrochemical cell electrically connected to an electrical source, the method comprising:

sensing a parameter of said gas output and creating a sensed-first signal indicative of said parameter;

retrieving a predetermined value from a memory device, said predetermined value indicative of an expected increase in said parameter over a period of time;

monitoring said sensed-first signal over said period of time to determine an increase in said parameter;

providing a signal to one or more of an alarm and said electrical source in response to said increase in said parameter being less than said expected increase in said parameter; and

determining said predetermined value based on said quantity of energy to said electrochemical cell.

29-42. (cancelled)

PES-0042

43. (currently amended) An electrochemical cell system comprising:
an electrolysis cell configured to receive electrical energy and to produce hydrogen gas;
an electrical ~~energy~~ source configured to provide a quantity of electrical energy to said
electrolysis cell;

a sensing apparatus in operable communication with a gas output from said electrolysis
cell, said sensing apparatus adapted to provide ~~an output~~ a sensed signal indicative of a pressure
of said gas output; and

a computer in operable communication with said sensing apparatus and said electrical
energy source, said computer including:

~~a memory device configured to store a first operational parameter, and~~
~~a processor programmed for~~

retrieving a first operational parameter and a predetermined variance from a
memory device;

comparing said sensed signal to said first operational parameter;
providing a third signal to said electrical source in response to said sensed signal
differing from said first operational parameter by an amount greater than said predetermined
variance;

adjusting an output of said electrical source in response to said third signal;
adjusting at least one of said predetermined value and said predetermined variance based
on feedback from said electrical source; configured to receive a digital representation of said
output signal and said first operational parameter, said processor configured to compare said
digital representation of said output signal to said first operational parameter, and to regulate said
quantity of energy provided to said electrolysis cell in response thereto;

wherein said processor and a non-volatile memory device are operably coupled to a
remote computer, said remote computer is configured to provide said first operational parameter
to said non-volatile memory device.

PES-0042

44. (currently amended) The electrochemical cell system of claim 43, wherein:
said first operational parameter is indicative of an expected increase in gas output
pressure over a period of time, said processor is adapted to monitor said output-sensed signal
over said period of time to determine a change in said gas output pressure, and said processor is
adapted to provide an interrupt signal to said energy source in response to said change in said gas
output pressure being less than said expected increase.

45. (previously presented) The electrochemical cell system of claim 44 wherein said
processor is adapted to determine said first operational parameter based on said quantity of
energy to said electrochemical cell.

46. (previously presented) The electrochemical cell system of claim 45 wherein said
processor is adapted to receive a signal indicative of said quantity of energy in response to
feedback from said energy source.

47. (previously presented) The electrochemical cell system of Claim 4, wherein said
electrochemical cell comprises an electrolysis cell.